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# Matt Klimesh

Biography Dr. Matthew Klimesh has been a member of the Information Processing Group at JPL since 1996. His background is in information theory, data compression, communications theory, and mathematics. Past work includes co-developing the "ICER" wavelet-based image compression algorithm and software, which has been used for onboard compression of thousands of images on the Mars Exploration Rovers. He developed the "Fast Lossless" (FL) compression algorithm for multispectral and hyperspectral images.

Education

- Ph.D., Electrical Engineering: Systems, University of Michigan, Ann Arbor 1995.
- M.S., Electrical Engineering: Systems, University of Michigan, Ann Arbor 1990.
- B.S., Electrical Engineering, University of Michigan, Ann Arbor 1989.

Research Interests

- Multispectral/hyperspectral image data compression
- Image data compression
- Compressed sensing
- Information theory

Selected Publications

1. A. Kiely, M. Klimesh, "Exploiting Calibration-Induced Artifacts in Lossless Compression of Hyperspectral Imagery," *IEEE Trans. Geoscience and Remote Sensing*, vol. 47, no. 8, pp. 2672-2678, August 2009.

2. N. Aranki, D. Keymeulen, M. Klimesh, A. Bakhshi, "Hardware Implementation of Lossless Adaptive and Scalable Hyperspectral Data Compression for Space," *Proc. NASA/ESA Conf. Adaptive Hardware and Systems (AHS)*, July 29-August 1, 2009, San Francisco, CA, USA, pp. 315-322.

3. M. Klimesh, A. Kiely, H. Xie, N. Aranki, "Spectral Ringing Artifacts in Hyperspectral Image Data Compression," *IPN Progress Report*, vol. 42-160, 17 pages, Jet Propulsion Laboratory, February 15, 2005.

4. J. Hamkins, M. Klimesh, R. J. McEliece, B. Moision, "Capacity of the Generalized PPM Channel," *Proceedings 2004 International Symposium on Information Theory (ISIT 2004)*, June 27-July 2, 2004, Page 334.

5. J. Maki et al., "The Mars Exploration Rover Engineering Cameras," *J. Geophysical Research -Planets*, vol. 108, no. E12, 8071, December 2003.

6. S. Daftuar, M. Klimesh, "Mathematical Structure of Entanglement Catalysis," *Phys. Rev. A*, vol. 64, no. 4, 042314, September 2001.